

## QUARTERLY PROGRESS REPORT FOR THE PERIOD July-Sept, [REDACTED]

PROJECT TITLE: CounterBW Point Detectors DOE/HQ PMIS)  
DOE/HQ PROJECT NUMBER: CB04LL LAB/CONTRACTOR: LLNL  
B&R CODE: GC0404 DATE: [REDACTED]  
PRINCIPAL INVESTIGATOR(S): Dr. R. Mariella Jr., LLNL, 925-422-8905  
HQ PROJECT MANAGER: (Page Stoutland, NN- 1, (202) 586-3263)

**PROGRESS DURING THIS QUARTER:** During the last quarter, we completed and tested the Version I system at PNNL. We have not, yet, tested the system with real reagents, only with simulated samples and reagents. This quarter, we began assembling the Version II system. The Version II system consists of updated aerosol collector, updated fluidics, and an updated flow cytometer.

**COMMENTS:**

- The updated aerosol collector consists of a Research International aerosol collector with an LLNL-designed virtual impactor on the front-end. This impactor allows four times the volume of air to be sampled. The relevant particles are forced into the part of the air stream which then goes through the normal collector. This will increase the overall efficiency of the collector by a factor of four. During the past quarter, updated virtual impactors were fabricated in silicon and steel using etching techniques and are being tested.
- The updated fluidics consists semi-disposable modules in flexible plastic that will be replaced during routine maintenance every week or so. This provides for decreased operational costs overall. This quarter, we received the prototype plastic structures from our vendor and have built two types of pneumatic actuators. We are busy debugging the hardware.
- The updated flow cytometer is the Luminex cytometer which can perform multiplexed assays using a common fluidic system. Luminex prepares beads which vary in color such that different antibodies can be placed on different color beads. By detecting the color of the bead and the presence or absence of binding, the pathogen can be detected. This quarter, we verified the ability of the bead system to detect 4 simulants, *B.g.*, *E.h.*, Ovalbumin, and B.S.A. using a Facscan flow cytometer. We are debugging the assay using the Luminex.

FUNDING STATUS:

OPER\$

CAP \$

UNCOSTED FROM PREVIOUS FY:

CURRENT FY FUNDING:

TOTAL FUNDING AVAILABLE:

\$1,750.0K      \$0K

\$ SPENT THIS QUARTER:

\$645K      \$0K

\$ SPENT YEAR-TO-DATE:

\$1,750K      \$0K

\$ REMAINING FOR THIS FY:

\$0K      \$0K

ANTICIPATED UNCOSTED

CURRENT FY FUNDS:

\$0K      \$0K

TECHNICAL REPORTS/PRESENTATIONS TO: